FACT SHEET

Newport Hydrolysate Transportation

Background

The Newport Chemical Depot, located in Vermillion County, Ind., has safely stored 4 percent of the Army's chemical stockpile since the late 1960's. The depot plans to begin neutralizing the stockpile of liquid nerve agent VX on-site at the Newport Chemical Agent Disposal Facility (NECDF) in late-2003.

Neutralizing the risk

During the neutralization process, liquid VX is drained from steel containers and fed into mixing tanks containing hot water and sodium hydroxide. The contents are then vigorously mixed causing a chemical reaction that irreversibly destroys the agent and produces a byproduct called hydrolysate—a mixture of water, sodium hydroxide and organic phosphorous- and sulfur-containing compounds. Following neutralization, the hydrolysate will be tested at Newport to ensure there is no detectable agent in it prior to off-site transport.

After the terrorist attacks of Sept. 11, 2001, the Army made the decision to expedite the disposal of the stockpile at Newport using an accelerated neutralization process. This accelerated plan was coordinated with and approved by Indiana environmental regulators, and local, state and federal elected officials. The accelerated plan simplifies the original process and reorders its sequence by neutralizing the VX agent using hot water and sodium hydroxide, disposing of the neutralization byproduct (hydrolysate), and cleaning and disposing of the empty steel containers afterward. This accelerated neutralization process reduces the storage risk by two years.

Off-site secondary treatment

The neutralization process will generate approximately 900,000 gallons of hydrolysate.

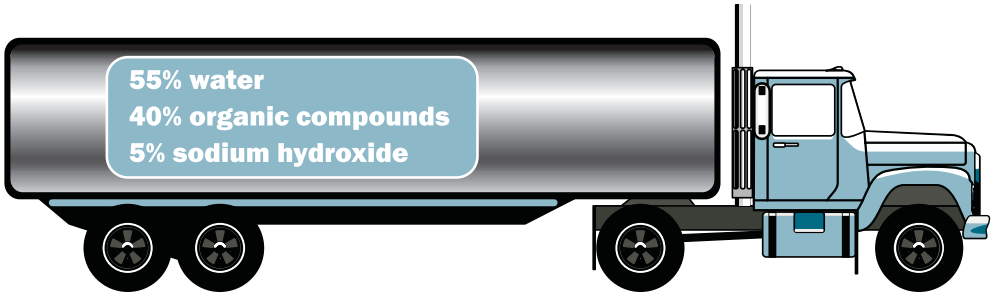
In December, the NECDF systems contractor, Parsons Infrastructure and Technology, Inc. awarded a contract and limited notice to proceed to Perma-Fix of Dayton, Inc., located in Ohio. Perma-Fix is a Clean Water Act and Resource Conservation and Recovery Act-permitted industrial waste and wastewater treatment, storage and disposal company. The contract is to fully demonstrate their capability to safely treat the hydrolysate so that the effluent meets all requirements under the Perma-Fix Wastewater Discharge Permit and state and federal environmental regulations and guidelines. Upon successful completion of these tests, Perma-Fix will be authorized to accept 30 percent of the hydrolysate generated by the NECDF for biotreatment and final disposal (with options to treat the remaining hydrolysate).

Hydrolysate Questions and Answers

What is hydrolysate?

Hydrolysate [pronounced high-DRAWL-ih-sate] is approximately 55 percent water, 40 percent organic compounds and 5 percent sodium hydroxide. Hydrolysate is NOT nerve agent VX and does not have the characteristics of nerve agent. The hydrolysate will be tested before it leaves the Newport facility to ensure that no VX is detected. By regulation, it is considered a hazardous waste and it will be handled accordingly.

The hydrolysate consists of a thin upper (primarily organic) layer (approximately 3-5%) and a lower (consisting of the water, sodium



For more information, contact the Public Outreach and Information Office of the Chemical Materials Agency (Provisional) **1(800) 488-0648** or **www.cma.army.mil**

or visit the **Newport Chemical Stockpile Outreach Office**
P.O. Box 279
140 South Main Street
Newport, Indiana 47966
Phone: (765) 492-4445
Fax: (765) 492-4475

For more information about Perma-Fix of Dayton, Inc., call:
Thomas A. Trebonik, CPGS
Public Outreach
Phone (330) 498-9750
Perma-Fix Facility
Phone (937) 268-6501
ttrebonik@aol.com
or visit
www.perma-fix.com/dayton

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hydroxide, and remaining organics) layer. The upper layer of the hydrolysate has a moderately low flash point, which is the lowest temperature at which a liquid gives off ignitable vapor. The organic portion of hydrolysate would have to reach a temperature of 127 degrees Fahrenheit before producing any ignitable vapor. The water portion of hydrolysate has a flash point in excess of 205 degrees Fahrenheit.The flammability hazard is comparable to the flammability of water with a 3-5% layer of diesel fuel sitting on top of the water.

Hydrolysate is very caustic, or corrosive, as it has a pH greater than 12. Liquid drain cleaners are very similar to hydrolysate in that they too, are very caustic. Like liquid drain cleaners, the hydrolysate's density is about 1.17, making it thicker than water.

Hydrolysate has a very strong odor. Perma-Fix has an active, ongoing program to eliminate all odors from the facility. Perma-Fix has recently installed a regenerative thermal oxidizer (RTO) on portions of the facility associated with biological treatment. The RTO is the best available technology for this purpose. It is designed to capture and destroy any odor that may be generated.

What will happen to the hydrolysate?

Perma-Fix plans to pre-treat the hydrolysate by mixing it with an oxidizing compound (such as hydrogen peroxide), followed by biotreatment. In biotreatment, micro organisms will destroy the remaining organic compounds. Following successful biotreatment, Perma-Fix will discharge the effluent to the Montgomery County Regional Wastewater Treatment Plant. This discharge is managed and regulated under the terms and conditions of a pretreatment agreement between Perma-Fix and Montgomery County.

Perma-Fix, voted one of the top ten TSD companies in the U.S. and Canada by readers of Environmental Technology, is regulated to handle and process wastewater similar to hydrolysate on a regular basis.

How will the hydrolysate be transported?

To transport the hydrolysate from Newport, Perma-Fix will use three dedicated tanker trucks, equipped with Global Positioning Systems to monitor the location of the trucks via satellite communication. The tankers are custom designed and U.S. Department of Transportation (DOT) approved for safe transportation of hazardous waste. The trucks will travel primarily on state and federal highways and will follow approved hazardous waste transportation routes. Hydrolysate will be transported in accordance with DOT rules as a Class 8 caustic hazardous waste and a subsidiary Class 3 flammable hazardous waste. The hydrolysate transported by these trucks is, in fact, less hazardous than many of the materials being transported daily on U.S. highways.

Who drives the trucks? What kind of training do they receive?

The DOT requires hazardous material drivers to obtain special certification prior to hauling any hazardous waste. Drivers also are trained in contingency plans and emergency response activities. This thorough training has resulted in nationwide accident rates ten times lower for hazardous waste transportation than regular shipping modes of transportation according to DOT data. The DOT records transportation related statistics, including safety information, which is available to the public at www.dot.gov. Each truckload will be carefully inspected, recorded and tracked.

Protecting the public and the environment

Chemical Weapons Convention inspectors may be present at Perma-Fix to ensure that all aspects of the hydrolysate biotreatment meet treaty requirements. Teams at both NECDF and Perma-Fix are working closely with local, state and federal emergency management agencies to ensure that human health and the environment are protected during the transport of hydrolysate. Congress, the National Research Council, Environmental Protection Agency, Centers for Disease Control and Department of Health and Human Services also provide oversight.